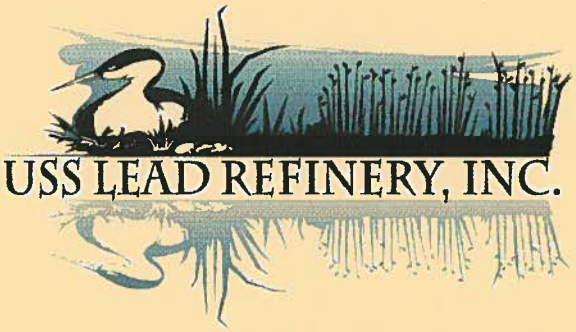

SITE-WIDE SAMPLING AND ANALYSIS REPORT

USS Lead Refinery Site
IND 047 030 226
5300 Kennedy Ave.
East Chicago, Indiana

July 24, 2001

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EXECUTIVE SUMMARY

Soils containing elevated concentrations of lead have been remediated at the USS Lead Refinery Site (the "USS Lead Site") IND 047 030 226, located at 5300 Kennedy Avenue in East Chicago, Lake County, Indiana (Figure 1) pursuant to the approved Interim Stabilization Measures (ISM) Work Plan and in partial fulfillment of the Partial Interim Agreed Order in Cause No. N-296 (effective April 13, 1990). This Site-Wide Sampling and Analysis Report (Site-Wide Report) provides data collected on the soil, sediment and surface water at the USS Lead Site to verify that the site meets remediation goals in partial fulfillment of the Indiana Department of Environmental Management (IDEM) requirements for closure and the Partial Interim Agreed Order in Cause No. N-296. The data collected for the Site-Wide Report is also submitted to United States Environmental Protection Agency (US EPA) in partial fulfillment of the ISM and the Modified RCRA Facility Investigation (MRFI).

Soil, sediment and surface water were sampled according to the approved Site-Wide Sampling and Analysis Plan (Site-Wide SAP), dated April 24, 2000 and approved by IDEM on August 9, 2000 with modifications agreed to on August 22, 2000 in a letter from Adrian Brown Consultants, Inc. (Adrian Brown) to IDEM. Soil, sediment and surface water sampling activities were performed in accordance with the approved Site-Wide SAP and the RISC User's Guide. Material in areas which did not meet site closure requirements and which could be removed was consolidated into the CAMU during the winter and spring 2001 and confirmatory samples of the areas were collected in spring 2001.

The Site-Wide SAP determined the nature and extent of on-site areas at the USS Lead site that may require further remediation. The following conclusions are based on the results of the Site-Wide SAP:

- All VOCs and SVOCs were below RISC Tier 1 Industrial Closure Levels. No further sampling of VOCs and SVOCs are necessary at the USS Lead site.
- Five (5) removal areas were defined during the Site-Wide investigation.
- Three removal areas were cleaned as part of the material removal associated with the Site-Wide investigation. Removal Area 1 was cleaned and the confirmatory samples, collected on July 19, 2001, are expected to confirm that soil concentrations in Removal Area 1 are below RISC Tier 1 Industrial Closure Levels. Removal Area 2 was cleaned and confirmatory samples collected on April 5, 2001 have measured soil concentrations below RISC Tier 1 Industrial Closure Levels for lead, antimony, arsenic and cadmium. Confirmatory sample soil concentrations at Removal Area 3 indicated that 98.4% arsenic removal was achieved. Arsenic is not mobile at the USS Lead site, and no further material removal of this area is proposed.
- Remediation of Removal Areas 4 and 5 (site-wide sample locations SS-01-04 and SS-04-02) will continue when water levels at the edge of the wetland permits.
- Remaining soil concentrations above RISC Tier 1 Industrial Closure Levels are present in the wetlands area on the southern portion of the site. The metals in that area are not mobile as indicated by Site-Wide groundwater results and excavation in this area is not possible.

1.0 INTRODUCTION

Soils containing elevated concentrations of lead have been remediated at the USS Lead Refinery Site (the "USS Lead Site") IND 047 030 226, located at 5300 Kennedy Avenue in East Chicago, Lake County, Indiana (Figure 1) pursuant to the approved Interim Stabilization Measures (ISM) Work Plan and in partial fulfillment of the Partial Interim Agreed Order in Cause No. N-296 (effective April 13, 1990). This Site-Wide Sampling and Analysis Report (Site-Wide Report) provides data collected on the soil, sediment and surface water at the USS Lead Site to verify that the site meets remediation goals in partial fulfillment of the Indiana Department of Environmental Management (IDEM) requirements for closure and the Partial Interim Agreed Order in Cause No. N-296. The data collected for the Site-Wide Report is also submitted to United States Environmental Protection Agency (US EPA) in partial fulfillment of the ISM and the Modified RCRA Facility Investigation (MRFI).

Soil, sediment and surface water were sampled according to the approved Site-Wide Sampling and Analysis Plan (Site-Wide SAP), dated April 24, 2000 and approved by IDEM on August 9, 2000 with modifications agreed to on August 22, 2000 in a letter from Adrian Brown Consultants, Inc. (Adrian Brown) to IDEM.

1.1 Purpose

The purpose of this report is:

- to report all of the soil, sediment and surface water data collected under the Site-Wide SAP,
- to report any deviations from the Site-Wide SAP, and
- to identify areas that may require further remediation.

1.2 Objectives

The Site-Wide SAP objectives were:

- to identify areas that may require further remediation,
- to establish that the site meets soil remediation goals, and
- to establish closure of the USS Lead site.

2.0 FIELD ACTIVITIES

Soil, sediment and surface water was sampled according to the Site-Wide SAP by LAW Engineering and Environmental Services, Inc. on September 13 – October 6, 2000. Soil, sediment and surface water analyses were conducted by Test America, Inc. in Bartlett, Illinois, an approved EPA laboratory as per the approved Site-Wide SAP. Material in areas which did not meet site closure requirements and which could be removed was consolidated into the CAMU during the winter and spring 2001 and confirmatory samples were collected on April 5, 2001. The confirmatory samples were analyzed by Severn Trent Laboratories in Chicago, Illinois, an

approved EPA laboratory. Severn Trent Laboratories is an approved EPA laboratory and has provided a Quality Assurance Project Plan to meet the project objectives.

An additional sample was collected on April 20, 2001 when US EPA's contractor Techlaw identified an area that appeared to be slag material. This sample is also included with the confirmatory sample locations and results.

Soil, sediment and surface water sampling activities were performed in accordance with the approved Site-Wide SAP and the RISC User's Guide and the activities are summarized below. A list of the samples collected, and analyses performed are provided in Table 1 and sample locations are illustrated in Figure 2.

2.1 Surface and Sub-Surface Soil Sampling

The surface soil sampling was implemented by setting up a sampling grid oriented north-south and east-west, using 100-foot spacing as described in the Site-Wide SAP, illustrated in Figure 2 and in accordance with the RISC User's Guide (Section 2.4). A random sample generator was used and the cube root of the total number of grid intersection points was used to determine the number of sample locations.

Twenty-six (26) surface soil sample locations were identified and samples were collected. In addition, 7 soil borings were drilled and 44 samples were collected from those borings. Sub-surface samples were collected from 1 foot, 2 feet, 3 feet, 4 feet and 5 feet below ground surface (bgs) as described in the Site-Wide SAP.

In addition to the surface and sub-surface sampling, 4 background soil boring locations were sampled as recommended in the RISC User's Guide (Section 2.4.2). The additional 4 background soil borings were drilled north of the CAMU where background concentrations could be determined and a total of 24 samples were collected.

A total of 84 soil samples were collected at the USS Lead site as part of the Site-Wide SAP.

2.1.1 Sampling Procedure

All samples were collected as described in the approved Site-Wide SAP and in accordance with the RISC User's Guide. In summary, the sampling procedure was as follows:

- surface soil samples were collected at 6 inches bgs, using a decontaminated stainless steel hand auger or spoon and sample bucket,
- the hand auger was removed from the subsurface and the sample bucket was placed onto a clean piece of disposable plastic sheeting,
- the soil was placed in a stainless steel bowl and a photoionization detector (PID) was used to screen for volatile organic compounds (VOCs),
- if the PID reading was greater than background, a VOC sample was collected as a grab sample prior to the sample being homogenized or composited,
- the samples not analyzed for VOCs were homogenized with a stainless steel spoon,
- the sample was placed into an appropriate laboratory certified glass sample container, and
- all samples were placed in a cooler and kept at less than 4°C and sent to Test America or Severn Trent for analysis.

At soil boring locations, a surface soil sample was collected, and then sub-surface soil samples were collected by repeating the steps above at depths of 12 inches bgs, and 2, 3, 4, and 5 feet bgs as required by the RISC User's guide.

2.1.2 Sample Identification System

A sample identification system was implemented to properly track sampling activities. Samples were designated with a six-digit code indicating sampling round and sample number so that each sample had a unique number. The sampling activities and examples of the identification coding system associated with each type are listed below with the following explanation:

Soil Samples	SS-ab-0yz	SS = Soil sample
		ab = sample round number
		y = sample number
		z = additional sample number for soil borings

An example of a soil boring sample identification number is SS-04-023. This would be the second sample collected (generally at 2 feet bgs) in a soil boring at soil location SS-04-02. Exact soil identification numbers and sampling depths are provided in Table 1. Sample locations are illustrated in Figure 2.

Duplicate samples were also identified with a unique sample number so that duplicate samples were not identifiable to the laboratory.

2.1.3 Sample Handling and Documentation

Samples were handled as follows:

- a sufficient volume of sample was placed into the laboratory certified containers,
- the rims of the jars were wiped with a disposable towel to ensure a proper seal, and closed,
- samples were labeled using a permanent marker,
- samples were placed in a cooler and kept below 4°C,
- the date, sample time and analysis were recorded,
- chain of custody forms were properly completed, and
- samples were shipped via an overnight parcel service to the laboratory in sealed containers with custody seals.

2.1.4 Sample Analysis

Surface and sub-surface soil samples were sent to Test America, Inc. in Bartlett, Illinois, an approved EPA laboratory, for the following analysis:

- All samples were analyzed for total lead, antimony, nickel and zinc. Digestion was performed according to EPA Method 3051 and initially for all metals, the extract was analyzed by EPA Method SW-846 6010B. Beginning with Sample Set SS-03, lower detection limits for antimony were attained by using EPA Method 7041. Lead, nickel and zinc continued to be analyzed by Method 6010B.

- Seven samples were analyzed for Appendix IX metals by EPA Method 6010B, for cyanide by EPA Method 9010B and for sulfide by EPA Method 9030B.
- Samples were screened with a PID and VOCs were detected in 7 samples. Those samples were analyzed for Appendix IX VOCs and SVOCs by EPA Methods 8260B and 8270C, respectively.

2.1.5 Decontamination

Care was taken to minimize sample contamination by using disposable plastic sheeting between each sample and by using new disposable latex gloves between each sample process. All reusable equipment was decontaminated between each sample point according to the approved decontamination procedures described in the Site-Wide SAP.

2.2 Sediment Sampling

No sediment sampling was performed. All areas are expected to be covered after site work is complete.

2.3 Surface Water Sampling

Surface water data was reported to US EPA and IDEM in a March 30, 2001 letter from Geochemical Solutions to US EPA. The surface water sampling procedures, sample handling and documentation and sample analysis are summarized in this Site-Wide Report. Sample data results are summarized in Section 3.3 and sample locations are illustrated in Figure 3.

2.3.1 Sampling Procedures

Surface water samples were collected from the water in Remediation Area "A" and Remediation Area "B" of the USS Lead site. Surface water sample locations are illustrated in Figure 3.

To fulfill the surface water sampling requirements, the following activities were performed:

- surface water samples were collected utilizing a decontaminated polyethylene beaker attached to a polyethylene pole;
- field parameters were collected for pH, temperature, and conductivity;
- water was field-filtered as needed for dissolved constituents;
- trip blanks were prepared by the analytical laboratories and carried as required by the Site-Wide SAP; and
- rinsate blanks were prepared for the field sampling equipment to confirm adequate decontamination practices.

2.3.2 Sample Handling and Documentation

Samples were handled as follows:

- a sufficient volume of water was placed into the laboratory supplied containers,
- containers were wiped dry with a clean disposable towel,
- samples were labeled using a permanent marker,

- samples were placed in a cooler and kept below 4 degrees Celsius,
- date, sample time and analysis were recorded,
- a chain of custody form was properly completed, and
- samples were shipped via an overnight parcel service to the laboratory in a sealed container with a custody seal.

2.3.3 Sample Analysis

Samples were sent to Test America, Inc. in Bartlett, Illinois, an approved EPA laboratory, for the following analyses:

- dissolved lead was analyzed by EPA Method 7421;
- dissolved antimony was analyzed by EPA Method 7041;
- dissolved zinc and nickel were analyzed by EPA Method 6010B;
- modified Appendix IX VOC, SVOCs, and metals were analyzed by EPA Methods 8260B, 8270C, and 6010B, respectively;
- cyanide was analyzed by EPA Method 9010B; and
- sulfide was analyzed by EPA Method 9030B.

2.3.4 Decontamination

Care was taken to minimize sample contamination by using disposable filters and plastic tubing for the filtering process, and new disposable latex gloves between each sample process. All reusable equipment was decontaminated between each sample point.

2.4 Quality Assurance/Quality Control (QA/QC)

As part of the Quality Assurance/Quality Control (QA/QC) described in the Site-Wide SAP, all QA/QC procedures were performed in accordance with applicable technical standards, EPA requirements, regulations, and guidance. QA/QC duplicate and matrix spike samples were collected and analyses were performed according to the approved Site-Wide SAP.

Six duplicate sample locations were collected and 5 rinsate blanks were collected. Four rinsate blanks were reported to US EPA and IDEM in the March 30, 2001 letter from Geochemical Solutions to US EPA referenced above. The data and data tables from the March 30, 2001 letter will also be provided in this report, however the QA/QC data for those samples already reported to IDEM will not be distributed again as discussed with IDEM (pers. Communication).

Rinsate blanks were prepared by pouring distilled water over decontaminated sampling equipment and collecting it into appropriate laboratory supplied containers. Rinsate blanks were prepared at a maximum of one blank per every 10 investigative samples collected. Rinsate blanks were submitted to the laboratory for the same analyses as the investigative samples and duplicates.

2.5 Material Removal

Material in areas which did not meet site closure requirements and which could be removed was consolidated into the CAMU during the winter and spring 2001. Removal areas are illustrated in Figure 4. Material was removed and hauled by USS Lead according to the ISM Workplan.

As part of the material removal, seventeen samples were collected along the eastern side of the CAMU to define the extent of contamination. These samples were collected on March 20, 2001 and are designated with the following notation: sample locations are numbered S-1 through S-8, and samples were collected and labeled with an A to indicate 0-6" bgs and with a B to indicate 18-24 inches bgs. Sample S-5C was a grab sample of red material at the sample location S-5. Material removal control sample locations are illustrated on Figure 5.

The soil samples to determine extent of material removal were collected as described in Section 2.1 above with the exceptions that Severn Trent Laboratories in Chicago, Illinois, an approved EPA laboratory, analyzed the samples and Level 2 QA/QC was performed. Level 2 QA/QC was performed because these were material removal control samples.

2.6 Confirmatory Sampling

Confirmatory soil sampling events were performed on April 5, 2001, April 20, 2001 and July 19, 2001 after contaminated material had been removed and consolidated in the CAMU as described above. The confirmatory soil samples were collected as described in Section 2.1 above with the exception that Severn Trent Laboratories in Chicago, Illinois, an approved EPA laboratory, analyzed the samples. The April 20, 2001 confirmatory sample (SS-23-01) was collected when US EPA's contractor, Techlaw, identified an area that appeared to be slag material. This sample is also included with the confirmatory sample locations and results. A total of nine confirmatory samples were collected at the USS Lead site on April 5, 2001 and April 20, 2001 and these locations are illustrated on Figure 5.

Seven confirmatory samples collected on July 19, 2001 were handled as described in Section 2.1 above and sent to Severn Trent Laboratories for selected metal analyses. The sampling locations and data will be submitted as a supplement to this report.

3.0 ANALYTICAL RESULTS

For purposes of this evaluation, the soil and surface water sample analytical results presented below were compared to the Indiana Department of Environmental Management, *Draft Risk Integrated System of Closure (RISC) Technical Manual* Tier 1 Industrial/Commercial Closure Levels (RISC Tier 1 Industrial Closure Levels), dated September 15, 2000. Background soil, surface soil, sub-surface soil and surface water sampling results are reported in Tables 2 through 14 and summarized below. Summary laboratory reports and chain-of-custody documents are included in Attachment 1 through Attachment 3. Laboratory QA/QC reports will only be provided to IDEM and are provided in Attachment 4. Laboratory QA/QC Reports will be filed by IDEM and Geochemical Solutions and additional QA/QC Report copies will be distributed upon request.

3.1 Background Surface and Sub-surface Soil Samples

The background soil sample results are reported in Table 2 and Table 3 and can be summarized as follows:

- All background soil concentrations were below RISC Tier 1 Industrial Closure Levels.
- Soil concentrations did not vary significantly with depth in the soil borings.
- The average concentration for antimony, lead, nickel and zinc is 1.7, 4.9, 3.1 and 9.3 mg/kg, respectively.
- Sample SS-05-021 was analyzed for Appendix IX metals, cyanide and sulfide and all concentrations are below RISC Tier 1 Industrial Closure Levels.

Background soil locations are illustrated in Figure 2.

3.2 Surface and Sub-surface Soil Sampling Analytical Results

Surface and sub-surface soil samples results are reported in Tables 4 through 9 and can be summarized as follows:

- All soil results for nickel and zinc were below RISC Tier 1 Industrial Closure Levels.
- Soil concentrations decreased with increasing depth in all soil borings. All soil boring samples were below RISC Tier 1 Industrial Closure Levels for antimony, nickel and zinc. All three soil borings which did not meet RISC Tier 1 Industrial Closure Levels for lead at the surface, were below RISC Tier 1 Industrial Closure Levels within 12 inches bgs.
- Of 58 samples analyzed for antimony, 52 concentrations were below RISC Tier 1 Industrial Closure Level of 620 mg/kg.
- In samples analyzed for all 14 Appendix IX metals, all Appendix IX metal concentrations were below RISC Tier 1 Industrial Closure Levels except lead, antimony and arsenic.
- In all samples, when lead concentrations were below the RISC Tier 1 Industrial Closure Levels, all metals were below the respective RISC Tier 1 Industrial Closure Level except for one sample for antimony (SS-01-05) and one sample location for arsenic (SS-06-02 and duplicate sample SS-06-03).
- All VOCs were undetected except acetone in sample location SS-06-05 and duplicate sample SS-06-06. Acetone was detected at an average concentration of 674 µg/kg, well below the RISC Tier 1 Industrial Closure Level of 41,000 µg/kg. In addition, detection of acetone could be the result of laboratory analytical processes.
- All SVOCs were undetected except Bis(2-ethylhexyl)phthalate in sample location SS-06-02. The duplicate sample SS-06-03 was undetected. Bis(2-ethylhexyl)phthalate was detected at a concentration of 651 µg/kg, well below the RISC Tier 1 Industrial Closure Level of 980,000 µg/kg.
- TPH was undetected in all samples except SS-06-05 and duplicate sample SS-06-06. The average concentration for this sample location was 3,680 mg/kg.
- All cyanide and sulfide concentrations were below RISC Tier 1 Industrial Closure Levels.
- Five material removal areas have been identified with contaminated material as a result of the Site-Wide SAP activities. Material removal is described in Section 3.4 below.

3.3 Surface Water Sampling Analytical Results

Surface water results were presented to US EPA and IDEM in a letter from Geochemical Solutions on March 30, 2001. The sampling was performed in general accordance with the approved Site-Wide SAP as described in Section 2.3 above. Surface water data are provided in Table 12 through Table 14. A summary of the surface water results is provided below:

- All analyzed modified Appendix IX VOCs were undetected in all samples (Table 13).
- All analyzed modified Appendix IX SVOCs were undetected in all samples (Table 14).
- All analyzed modified Appendix IX metals were undetected except dissolved antimony, dissolved arsenic and dissolved barium (Table 12). Dissolved antimony and dissolved arsenic were detected at concentrations below IDEM criteria for Human Health, Noncancer, non-drinking water sources. IDEM has not established criteria for dissolved barium concentrations in surface water.
- All analyzed cyanide and sulfide were undetected in all samples (Table 12).

3.4 Material Removal and Material Removal Sample Results

Five areas have been identified with contaminated material as a result of the Site-Wide investigation. The 5 areas are illustrated in Figure 4. Material removal from each of the areas illustrated is described below.

3.4.1 Removal Area 1

In Removal Area 1 on the east side of the CAMU, samples were collected to determine the extent of material removal necessary. The samples that were collected are illustrated in Figure 5 and labeled S-1 through S-8 (A, B & C samples were collected). The results from these samples are provided in Table 10 and the laboratory data sheets are provided in Attachment 2.

The material removal sample results can be summarized as follows:

- lead concentrations for 13 of 17 sample concentrations were below RISC Tier 1 Industrial Closure Level for lead;
- lead concentrations decreased with increasing depth; and
- slag material was still present on the southeast side of the CAMU, at sampling locations S-5C, S-6A, S-8A and S-8B.

Material was removed from approximately 20,335 square feet around the samples S-5C, S-6A, S-8A and S-8B, to the southeast of the CAMU. This material was removed in April 2001 and confirmatory samples were collected on July 19, 2001 and are currently at Severn Trent laboratory. Confirmatory sample results for the area southeast of the CAMU will be submitted separately as a supplement as soon as they are received.

3.4.2 Removal Area 2

Removal Area 2 covers approximately 2,690 square feet on the northwestern portion of the site. Material in this area appeared to have been dumped at this location and was only located on the surface near sample location SS-04-011 (measured lead concentration of 1,370 mg/kg), collected

from 0-6 inches below ground surface. A soil boring was performed at this location (SS-04-01) and the second sample, SS-04-012 was below RISC Tier 1 Industrial Closure Levels for all analyzed metals (lead concentration was undetected at 5.1 mg/kg). Material was removed from the surface and placed in the CAMU. Two confirmatory sample locations, a duplicate and a matrix spike/matrix spike duplicate were collected from Removal Area 2 on April 5, 2001.

3.4.3 Removal Area 3

Removal Area 3 is located on the western edge of Remediation Area A and on the northern part of Remediation Area 3. The area was identified by site-wide sample SS-01-011 and contained lead at a concentration of 5,390 mg/kg. Material was removed from an area of approximately 15,280 square feet and the material was placed in the CAMU. Three confirmatory samples were collected from Removal Area 3 on April 5, 2001.

3.4.4 Removal Area 4

Lead contaminated material was identified in Removal Area 4, however, the material has not been removed. Removal Area 4 was identified by sampling boring location SS-04-02 (lead concentration measured at 3,100 mg/kg) and surface soil samples SS-06-05 and SS-06-06 (SS-06-06 was a duplicate sample, lead concentrations were measured at 13,700 mg/kg and 19,800 mg/kg, respectively). This area is at the edge of the wetlands and material could not be removed due to excess water. It is expected that the material in this area will be removed in the fall or winter 2001/2002 as soon as the area is accessible. Confirmatory samples of the area will be collected after material is removed.

3.4.5 Removal Area 5

Lead contaminated material was identified as Removal Area 5 by surface soil sample SS-01-04, with a measured lead concentration of 11,700 mg/kg. This area is at the edge of the wetlands and material could not be removed due to excess water. It is expected that the material in this area will be removed in the fall or winter 2001/2002 as soon as the area is accessible. Confirmatory samples of the area will be collected after material is removed.

3.4.6 Additional Material Removal

Additional material removal has been completed at the USS Lead site as part of the ISM. Material removed was consolidated into the CAMU. These areas include Remediation Area A, Remediation Area B, Remediation Area C, the canal, the canal haul road, the former tank area and the railroad tracks to the north and east of the site. Material Removal for all of these areas has been confirmed and has been reported in the Draft MRFI Report and the Canal Remediation Report as part of the ISM.

As part of the Site-Wide investigation, samples were collected in the wetlands area on the southern portion of the site and elevated lead concentrations were detected, however, these areas are not considered for material removal for the following reasons:

- **Migration of contaminants.** Migration of contaminants from the wetlands is currently monitored and the results indicate that the metals are immobile. Migration of metals continues to be monitored by downgradient groundwater wells and quarterly collection of groundwater samples. The quarterly

groundwater sample results are reported to IDEM in the USS Lead Quarterly Progress Reports.

- **Availability of contaminants.** Availability of metals to human health and the environment is not a concern at these locations because the metals do not migrate as discussed above. Availability of metals has not effected vegetation; vegetation in this area continues to grow.
- **Natural Treatment System.** Wetlands such as the one naturally located on the USS Lead site are a common treatment for remediation of surface water and groundwater in metal-rich environments.

3.5 Confirmatory Sample Analytical Results

Confirmatory sample locations are illustrated in Figure 5, the results are tabulated in Table 11 and laboratory data sheets are provided in Attachment 2. The results can be summarized as follows:

- Material removal from the northern portion of Removal Area 1 and all of Removal Area 2 has been complete. The concentrations of metals in these areas were below RISC Tier 1 Industrial Closure Levels for all metals analyzed. Material removal from the remaining southern portion of Removal Area 1 is expected to be complete but is awaiting sample concentration results from the confirmatory samples collected on July 19, 2001.
- All confirmatory sample concentrations received thus far were below RISC Tier 1 Industrial Closure Levels for antimony, cadmium and lead.
- Seven of nine soil arsenic concentrations were below RISC Tier 1 Industrial Closure Levels. Two sample concentrations with measured arsenic above RISC Tier 1 Industrial Closure Levels were from the same location, Removal Area 3. At Removal Area 3, arsenic concentrations dropped from 2,870 mg/kg to an average 46.7 mg/kg for the three confirmatory samples collected in that location (confirmatory sample concentrations were measured at 102, 3 and 35 mg/kg). This indicates that 98.4% removal of arsenic was attained.

4.0 CONCLUSIONS

The Site-Wide SAP determined the nature and extent of on-site areas at the USS Lead site that may require further remediation. The following conclusions are based on the results of the Site-Wide SAP:

- All VOCs and SVOCs were below RISC Tier 1 Industrial Closure Levels. No further sampling of VOCs and SVOCs are necessary at the USS Lead site.
- Five (5) removal areas were defined during the Site-Wide investigation.
- Three (3) removal areas were cleaned as part of the material removal associated with the Site-Wide investigation. Removal Area 1 was cleaned and the confirmatory samples, collected on July 19, 2001, are expected to confirm that soil concentrations in Removal Area 1 are below RISC Tier 1 Industrial Closure Levels. Removal Area 2 was cleaned and confirmatory samples collected on April 5, 2001 have measured soil concentrations below RISC Tier 1 Industrial Closure Levels for lead, antimony, arsenic and cadmium. Confirmatory sample soil concentrations at Removal Area 3

indicated that 98.4% arsenic removal was achieved. Arsenic is not mobile at the USS Lead site, and no further material removal of this area is proposed.

- Remediation of Removal Areas 4 and 5 (site-wide sample locations SS-01-04 and SS-04-02) will continue when water levels at the edge of the wetland permits.
- Remaining soil concentrations above RISC Tier 1 Industrial Closure Levels are present in the wetlands area on the southern portion of the site. The metals in that area are not mobile as indicated by Site-Wide groundwater results and excavation in this area is not possible.